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AUTHOR Timmers, Shannon
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ABSTRACT

This briefing paper addresses two questions: What are current trends in higher level distance education? and What recommendations for action have emerged from recent distance education meetings and from the literature? To identify trends, five broad areas of evolution within the field of distance education were identified: institutions; associations; collaboration; applications of technology; and databases and information networking. Recent trends include: (1) a continuing expansion of higher level distance education through establishment of new open universities and other programs; (2) greater inter-institutional and international collaboration facilitated by technology; (3) increased sharing of expertise among developing countries and among developed and developing countries; and (4) an increasing emphasis on strengthening local skills. Recommendations for action in distance education highlight the importance of three components: (1) training (creation of mechanisms, systems, and materials for training in a range of distance education operations, including planning, management, design, development, production, delivery, support, and research and evaluation); (2) information (establishment of a global network to collect, disseminate, and systematize information on all aspects of distance education); and (3) collaboration (development of systems for sharing distance learning materials and for collaborative development projects). An extensive list of references is provided. (GL)

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HIGHER LEVEL DISTANCE EDUCATION AND THE NEEDS OF DEVELOPING COUNTRIES

A briefing paper for a UNESCO-ICDE Round table
13 August, 1988, Oslo, Norway
by
Shannon Timmers
Open Learning Agency, British Columbia, Canada

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Introduction

The speed with which distance education has evolved over the past two decades is unparalleled in the history of education. We are witnessing a worldwide explosion of distance teaching institutions and programmes: at the primary, secondary and tertiary levels; in public and private sectors; for adult and continuing education; in both developing and developed countries; and for formal and non-formal education. The development of these initiatives is reflected in new forms of collaboration between distance education practitioners and a range of new associations, and in active testing of technologies which support both teachers and learners. The evolution of distance education challenges educational theorists, pedagogists, administrators, technologists and researchers to provide sound foundations for the initiatives while coping with relentless transformation in global educational patterns. Above all, distance educators are challenged by the fundamental issue of their undertaking - the provision of educational opportunities for learners made distant by geographic and social barriers.

Education is under extreme pressure from a world population that exceeded 5 billion in 1987 and now grows by more than 80 million per year (Sadik, 1988), an annual growth rate that easily outstrips the total number of higher education students in the world. World population will reach 6 billion by the end of this century and will increase by 90 million per year with 90% of the growth taking place in developing countries (Canadian International Development Agency, 1987b). Urbanization also affects traditional patterns of education provision. The United Nations Fund for Population Activities (1986) estimated that half the world's population will live in cities by the year 2000. Technological advances, particularly in computing and communications, have not only diminished the effects of time and distance, but have also raised expectations and demands for information.

Distance education in 1988 finds itself squarely between imposing global social issues and the restraining forces of traditional practice and limited human and financial resources. In his Foreward to *Distance Education* (Asian Development Bank, 1987), S.V.S. Juneja comments:

> "Resistance to conceptual change in education is not inapposite. It introduces a healthy note of caution when even traditional educationists and planners in both industrialized and developing countries find themselves persuaded to support new methods of providing education to far greater numbers than has been possible through conventional methods. Most forcefully persuasive is the undesirable prospect of allowing large populations to remain unskilled and inadequately prepared to participate in important economic programs."

It is therefore of critical importance that distance educators, in partnership with policy makers and funding bodies, define efficient strategies of high development impact. With an estimated 12 million now learning 'at a distance', distance educators have established a good foot hold in the past twenty years. The next decade will surely test our collective creativity and ingenuity.

UNESCO and the ICDE

This UNESCO-ICDE Round Table brings together two organizations which have played key roles in transforming education. UNESCO's role in the development of distance education goes back to at least 1969 when ICDE's predecessor organization, the International Council for Correspondence Education (ICCE), became affiliated with UNESCO as a Category B non-governmental organization. Collaboration and

cooperation has continued and expanded. In addressing the 11th ICCE Conference in New Delhi, Charles Wedemeyer (1978) noted: "The cooperative activities of the past decade have no doubt influenced both ICCE and UNESCO. The purposes and functions of these organizations overlap and reinforce each other - in our joint concern for the improvement of educational opportunity worldwide, in our desire for equality of access to learning for all people, in our commitment to the improvement of the materials and methods of instruction - all in a framework recognizing the rights of all people to learn."

UNESCO provided financial assistance until the early 1980s toward publishing the *ICCE Newsletter*, later renamed the *ICCE Newsletter on Distance Learning* and, from 1982, the *ICDE Bulletin*. In 1980, ICCE responded to UNESCO's request for a list of distance education experts who would undertake consultancies. UNESCO provided partial travel grants for delegates from ten different developing countries attending the 12th World Conference of ICDE held in Vancouver in 1982. After that conference, an ICDE delegation visited UNESCO headquarters in Paris, arranging for the regular distribution of 50 copies of the *ICDE Bulletin* through UNESCO and opening a variety of contacts. A resolution at the Vancouver Conference had urged UNESCO to "collect, reproduce and disseminate important research findings on distance education for developing countries" (ICDE, 1983, 1986). Collaboration between the two organizations has continued with a UNESCO sponsored International Consultation on Higher Level Distance Education held at Deakin University, Australia, in 1987 (UNESCO, 1987b) and with this Round Table. UNESCO has also requested ICDE to carry out a survey of current resources in distance education and to compile findings in the form of a database.

UNESCO's support of distance education has continued on several other fronts. The Asia and the Pacific Programme of Educational Innovation for Development (APEID), operating from the UNESCO Regional Office for Education in Asia and the Pacific (ROEAP) in Bangkok, has sponsored an impressive series of distance education meetings in the region, primarily under APEID's Third Cycle of Activities, 1982-1986. Regional meetings were held in Islamabad (1983), and Colombo (1984). National workshops took place in Korea (1983), Sri Lanka (1983), China (1984), Bangladesh (1984), India (1985) and Pakistan (1985). These meetings culminated in an evaluation meeting in China in 1986. At the Tenth APEID Regional Consultation Meeting in Thailand in mid-1986, the growth of distance education in Asia and the Pacific was noted and, for programme development for the Fourth Cycle of APEID, distance education was identified "as a separate infrastructure for which plans and programmes were devised, most of them pointing in new directions where distance education could become relevant" (UNESCO, 1987a). As well, the ROEAP publishes an annual bulletin, two issues of which (UNESCO, 1978, 1985) were devoted to open learning and distance education. Finally, UNESCO continues its support of *Never Too Far: A Newsletter for Distance Education* published by Sukhothai Thammathirat Open University In Thailand.

UNESCO's involvement in distance education, both from headquarters and through its regional offices, has had a significant impact on the development of practical aids for practitioners and on the dissemination of important information. The APEID initiative is one of the finest examples of development impact in distance education. Also noteworthy is the series of seventeen papers on educational technology commissioned by the Canadian Commission for UNESCO (TVOntario, 1984). UNESCO's support for individual institutions is too widespread to chronicle, but two examples indicate the degree of commitment. Kotelawele and Samarasundara (1987)

note that, from its inception in 1980 until approximately mid-1986, UNESCO has supported the Open University of Sri Lanka to a value estimated at over 1.3 million USD. In a second example, UNESCO provided resources for feasibility studies on the establishment of the Palestine Open University (UNESCO, 1980a, 1980b), an initiative which has in part led to the development of al-Quds Open University in Amman, Jordan.

Wedemeyer's belief that the purposes and functions of ICDE and UNESCO overlap and reinforce each other are as timely today as when he stated them ten years ago. With the establishment of an ICDE Permanent Secretariat in Oslo, Norway, the Council is realizing a long standing desire. At the Second Business Meeting of the 12th World Conference of ICDE, held in Vancouver in 1982, Dr. Y.B. Mathur and Professor Wedemeyer proposed a resolution that ICDE establish a Permanent Secretariat at the earliest possible date. The resolution was carried. It has taken some time for ICDE to construct its permanent home, but in doing so we have created a better basis from which to continue our interaction with UNESCO.

Purpose and Scope of this Briefing Paper

This UNESCO Round Table, held within the framework of the ICDE 14th World Conference, brings together a group of eminent distance educators representing all global regions, a range of distance teaching institutions and international, regional and national distance education associations. The task at hand is to consider higher level distance education and the needs of developing countries, discuss these issues with UNESCO representatives and make recommendations on how UNESCO and ICDE can best cooperate to address priority needs in the biennium, 1988-89, and under UNESCO's third Medium Term Plan, 1990-95.

In preparing a briefing paper for Round Table participants, I was guided by two questions:

1. What are current trends in higher level distance education?

2. What recommendations for action have emerged from recent distance education meetings and the literature?

To identify trends, I have arbitrarily defined five broad areas of evolution within the field of distance education: a) institutions; b) associations; c) collaboration; d) applications of technology; and e) databases and information networking. Each of these areas is marked by recent developments in both developed and developing regions and, in many instances, involves the two-way flow of models, information and expertise. In summarizing recommendations, I leaned heavily on the work of participants of the Asian Development Bank's Regional Seminar on Distance Education held in late 1986 at Sukhothai Thammathirat Open University, Bangkok, various reports emanating from the Commonwealth Secretariat during the formulation of its 'Commonwealth of Learning' distance education initiative and on a search of the literature. It is worth noting that, in addressing each of the two questions above with special regard to developing countries, the greatest wealth of English-language information is derived from Asian sources. To some extent this reflects the contributions of APEID mentioned in the previous section, as well as the general animation of distance education in the region. African and Latin American information is more difficult to uncover, a condition worth further attention.

It is outside the scope of this paper, and probably unnecessary in this particular context, to review definitions of distance education, underlying theories, research findings, economic studies and political expositions. This has been done elsewhere

and with thoroughness. Interested readers can consult such works as Arger (1987), Baath (1981), Garrison and Shale (1987), Harris (1987), Hawkridge (1987, 1988), Henri and Kaye (1985), Moore (1986), Neil (1981), Perraton (1984, 1986, 1987), Perry (1984), Perry and Rumble (1987), Rumble (1986), Schutze *et al.* (1987), Sharma (1985, 1987), Sewart *et al.* (1983), Timmers (1986) and Wagner (1972, 1977).

Evolution of Distance Education Institutions

The growth and diversification over the past two decades of institutions and other bodies using distance education has its origins in the correspondence education movement of the 19th and 20th centuries. This history has been variously chronicled (see for example Bolton, 1986; Daniel *et al.*, 1982; Jenkins, 1980; Siqueira de Freitos *et al.*, 1986; Wentworth, 1978) and is referred to in many surveys of distance education. The radio education movement of the post-war years also provided impetus to transformation in educational provision, focussing as it did on rural development, health and nutrition teaching and teacher training in Latin America, Africa and, to a lesser extent, Asia (ALER, 1982; Bates, 1982; Eicher *et al.*, 1982; Hawkridge and Robinson, 1982; Jamison and McAnany, 1978; Kinyanjui, 1977; McAnany *et al.*, 1983; Nwaerondu and Thompson, 1987). However, it was the open university movement of the 1970s that provided legitimacy and inspiration, rapid growth of technical expertise and teaching institutions of unprecedented scale. Indeed, the volume of literature accompanying the development of open universities (for example Daniel, 1977; Kaye and Rumble, 1981; Perry, 1977; Rumble and Harry, 1982; Wedemeyer, 1981), not to mention the wealth of case studies and description from all regions (for example Carr, 1986; R. Smith, 1987; Srisa-an,

1986, 1987a), confirms the importance of the movement. Shale (1987) has recently presented an overview of the pattern of open university development. He provides a typology of distance teaching institutions and discusses successful, unsuccessful and even unintentional innovations.

The establishment of open universities has not slowed in the 1980s and there have been variations on the model of autonomous, centralized institutions constituted on traditional university lines. Open universities of the 80s are: The Open University of Sri Lanka and the Open Universiteit (Netherlands), both established in 1981; Andra Pradesh Open University (India), 1982; University of the Air (Japan), 1983; Universitas Terbuka (Indonesia), 1984; and the Indira Gandhi National Open University (India), 1985 (Shale, 1987). The National Open University (Taiwan) and al-Quds Open University (Nasser, 1987) can be added to this list and a number of other initiatives are underway in Bangladesh (Sirajul Islam, 1987a), Burma (Sein, 1987), Denmark and Portugal (EADTU, 1987a), France, Nigeria and Poland (Shale, 1987) and Columbia. The Government of Malaysia has intermittently discussed the idea of a national open university and there have been recent rumblings in Egypt. In fact, activity is so widespread and fast-moving that it is impossible to determine the exact stage of development: once again the need for information networking and database construction is highlighted (see for example Perry, 1984).

Variations on the archetypal model of open universities are too numerous to mention here, but two notable departures are the decentralized institutions such as Spain's UNED (Popa-Lisseanu, 1985) and China's RTVU (McCormick, 1985; Zhou, 1987a, 1987b), and those without faculty such as Universitas Terbuka (Setijadi, 1987), al-Quds Open University (al-Quds Open University, 1986) and the British Columbia Open University (Ellis and Mugridge, 1983; Mugridge, 1986, 1987). These latter

institutions draw academic expertise from traditional colleges and universities by contracting faculty to write distance education course materials. Print production, media development and course distribution services are also externally subcontracted in some systems. In other words, while some newer institutions may be self-contained in management, they may not be self-contained for faculty, production, media or distribution.

The sheer volume and thoroughness of analysis and description arising from the open university movement has often led to an oversimplification of distance education by focussing on the open university model. In reality, the model itself has as many variations as there are open universities, is subject to both internal and external selective evolutionary pressures and does not always account for other distance education initiatives. Much of current higher level distance education finds its roots in distance teaching, external studies and correspondence units of existing traditional institutions in both developing and developed countries (see Bau *et al.*, 1987; Chib, 1988; Gitau, 1987; Hlynka and Mariam, 1986; Kaely, 1987; McIsaac and Koymen, 1988; Muro, 1988; Zhou, 1988). In Australia, for example, the entire distance education system is constructed in this fashion (Smith, 1984b) and will probably continue to be even after the current retrenchment (Livingston, 1988). India, too, had a rich history of correspondence education before the Andra Pradesh Open University and Indira Gandhi National Open University were established in 1982 and 1985, respectively (Mullick, 1987; Reddy, 1988), although the latter will undoubtedly serve to set new standards for distance education in South Asia. Africa has no open university, but this in no way reflects the range of distance education activity in the region (see for example Daniel, 1987; IEC/CET, 1987). In 1982, Paul Anderson suggested that as many as 50 Latin American universities have attempted to mount some sort of distance education programme while only

Venezuela and Costa Rica have established open universities (Anderson, 1982). Two other important examples of how distance and on-campus education have co-evolved are found at the University of the South Pacific (Gillard and Williams, 1986) and the University of the West Indies (Lalor and Marrett, 1986). Distance education systems at both of these regional universities have used various technologies, including satellite, to increase learner access to education in geographically dispersed, multi-national settings.

If there is a conclusion to be drawn from all of this varied activity, it is simply that distance education evolves on multiple paths, reacting to social and political environments, available financial resources and demography. Different models fuel new initiatives and collective experience grows. The dynamic balance between various models of higher level distance education may seem at times chaotic, but is also a sure sign of vigour and health. As Farrell and Haughey (1986) point out: "In discussing the future of distance education we are in fact discussing the future of education itself and the entire range of activities and age groups it represents."

Following the rapid expansion of open universities and other higher level distance education programmes in the 70s and early 80s, it is not surprising that educational policy makers and institutional administrators would begin to intensify their collaboration. In some instances governments have demanded rationalization of distance education programmes - we see this trend in India, Canada and Australia. In other instances, distance educators have discovered a variety of reasons to engage in joint ventures. Finally, new technologies have diminished the 'information float,' the time information spends in a communication channel (Naisbitt, 1982). The evolution of collaboration and technology are addressed in two later sections of this briefing paper, but some trends at the institutional level are worth mentioning here.

The mandates of some recently established distance education operations have clearly laid out a coordinating role. The Indira Gandhi National Open University is empowered by Government Act to "coordinate and determine the standards" of all distance education institutes in the country (Mullick, 1987; Reddy, 1987, 1988). The Open Learning Agency of British Columbia, established by the Provincial Government Act in 1987, and amalgamating the Open Learning Institute and the Knowledge Network telecommunications authority, is similarly empowered with an even more extensive mandate (Government of British Columbia, 1987; Mugridge, 1987). The Agency is charged with the responsibility of establishing a common credit bank and, in a process begun under the aegis of the Open University Consortium of British Columbia (Yerbury, 1985), has implemented a centralized registration system and a common university calendar for distance learners.

Advances in communications and computing technology are affecting distance education institutions everywhere by increasing awareness of and demand for appropriate tools and commensurate training in their application, and by enabling new forms of distance education provision. The Electronic University Network "is not an academic institution, but rather a bridge that links students to instructors and institutions throughout the United States" (EUN, 1987). Using a personal computer and modem, students have access to over 100 courses at the Associate, Bachelor's and Master's levels offered by American institutions such as the Universities of Maryland, Illinois, Ohio, Washington State, Iowa and California State Polytechnic to name but a few. Students also have electronic access to an on-line research library and student support services. EUN is a single example of a recent development in higher level distance education which blurs the customary distinctions between distance education institutions and their administrative, accreditation, production and delivery processes (Gellman-Buzin, 1987). Other examples are the International

Technological University, National Technological University, International Universities Consortium, Disted Services and the Open Learning Institute of Hong Kong. Some of these are explored in greater depth later in this paper.

Summary of Trends

1. Continuing expansion of higher level distance education through establishment of new open universities and other programmes;

2. Emergence of variations on the open university model;

3. Inter-institutional collaboration facilitated by technology;

4. Assignment of national, state or provincial coordinating responsibilities; and

5. Delegation of administrative functions to coordinating institutions or brokers.

Evolution of Distance Education Associations

Distance education associations, like the institutions, have their origins in earlier correspondence education movements. As an example, the ICDE was formed five decades ago as the International Council for Correspondence Education. Associations reflect the common interest of members and can provide fertile ground for cooperation and collaboration. There are three levels of distance education associations active today - national, regional and international. In some instances, these associations have established permanent secretariats, although it is as common that the membership is only pulled together at association meetings, occasionally by the publication of a newsletter or bulletin, and is headed by an executive preoccupied with full-time employment at busy institutions. There have been instances where associations have merged to form new bodies, become temporarily inactive, or perished completely. Recent developments, especially at the regional level, suggest that distance education associations are transforming themselves and increasing their cooperation in areas that would have been held as heretical in earlier times.

As in the case of available information on higher level distance teaching institutions, it has proved extremely difficult to uncover data on some associations, particularly in Latin America and Africa. This again points up the pressing need to create mechanisms which facilitate information networking. Undoubtedly, the vitality of some distance education associations is sapped by the geographic magnitude of their regions and a general lack of financial resources for publishing newsletters and attending meetings. It may well be that the ICDE, in collaboration with established distance education institutions and associations, and international and donor bodies, can play a key role in strengthening associations in developing countries and regions.

National Associations

Uncovering information on national distance education associations is a daunting task even though two of these bodies have achieved a level of organization exceeding that of some regional associations. The Canadian Association for Distance Education (CADE) was formed shortly after ICDE's 12th World Conference in Vancouver. This indicates an important benefit of staging an international conference in a particular region. The Norwegian Association for Distance Education (NADE) is, of course, cooperating with the ICDE to host the 14th World Conference and has provided a home for the international body's Permanent Secretariat here in Oslo. Aside from these two associations, there is a dearth of information on national distance education associations which may indicate in some cases their poor health or, more probably, that they tend to operate mainly within a country. It would be interesting to catalogue the articles of association of national bodies where they exist, along with other pertinent information, if for no other reason than to provide models for national cooperation and stimulation for the concept. As Daniel (1987) comments: "The glamour associated with international collaborative projects and the aid funds available may well make cooperation between countries easier to initiate than cooperation within a particular jurisdiction. Nevertheless, each government would also like to see HDE [higher distance education] providers within its own country cooperating sufficiently to ensure that a good range of programmes is available and undue duplication is avoided. In theory this is easy where governments control universities directly and difficult where they do not." He also notes that one mechanism available to governments for stimulating networking is the establishment of a common facility such as a telecommunications service or study centre system.

According to Daniel (1987), Argentina, Canada, New Zealand, Norway, Sweden, the United Kingdom and the United States are countries whose distance education associations have permanent secretariats. Of these, the Asociacion Argentina de Educacion a Distancia (AAED) is alluded to as early as 1983 and occasionally since then (Joseph, 1983, 1985, 1986). The AAED has held national conferences as recently as 1986 with support from the regional offices of both FAO and UNESCO, various government departments and some 13 universities (AAED, 1986). There were in 1985 over 50 national programmes of distance education at all levels in Argentina and the Association had over 430 members (A. Joseph, personal communication).

The Canadian Association for Distance Education is probably the best example of how a national association can flourish. CADE was established in 1983 and by 1986 listed over 40 institutional and more than 260 individual members in its directory (CADE, 1986). The Association publishes the scholarly journal, *Journal of Distance Education*, an annual membership directory and frequent newsletters which include Canadian regional reports of distance education activities. CADE holds annual meetings in different provinces as well as occasional topical meetings conducted by teleconference with participants drawn from across Canada and even overseas.

In Scandinavia, the Norwegian Association for Distance Education was established as the Association of Norwegian Correspondence Schools in 1967 as a voluntary organization to promote correspondence education and negotiate with government bodies on behalf of member institutions which currently number eighteen. Roll (1983) has discussed the development of NADE in some detail and suggests that Norwegian experience shows: "A strong organization for correspondence education is an important negotiating tool," and "positive and close relations with key personnel

in public or government bodies is necessary in order to achieve positive results." The Swedish Association for Distance Education (SADE) was founded in 1984 with the aim of promoting cooperation between members, research and development, exchange of material and information, conferences and international cooperation (Baath, 1985).

The United States Distance Learning Association (USDLA) was launched in September, 1987, and has a stated purpose to "promote the application of Distance Learning technologies to higher education, continuing education, corporate training and K [kindergarten] through 12 [senior matriculation] instruction" (USDLA, 1987). The Association uses teleconferencing technology for day-to-day communications and other business and has run a nationwide video teleconference entitled "Update on Interactive Learning" (J. Beaver, personal communication).

In a study carried out for the Commonwealth Secretariat, the International Extension College and Council for Educational Technology (IEC/CET, 1987) mention the Distance Education Association of New Zealand (DEANZ) whose "membership is open to distance education institutions and students or their parents." They add that the organization is new and is "actively concerned with developing distance education in the national context." Also mentioned are the National Council for Correspondence Education (NCCE) of India which, although once active, appears to be moribund, the Open Learning Federation (United Kingdom) which holds conferences and issues a newsletter, and the formation of a national association in Kenya in 1986 for which no details were given. However, the Kenya association is reported to be working out the details of a constitution at this time (F. Karani, personal communication).

In their study, IEC/CET indicate that 63% of distance education institutions surveyed belong to one or more distance education association. This observation, coupled with sporadic accounts of national associations in the literature, demonstrates a range of success at the national level. There can be little doubt that improved networking and information flow would facilitate the perception that national distance education associations can be vibrant and utilitarian.

Regional Associations

Regional distance education associations collectively provide the potential for a great deal of cooperation and initiative. They have the capacity to form strong bonds with both national distance education associations and key institutions in a region. They can develop useful relationships with related bodies, for example those promoting adult and continuing education or educational technology, as well as ties with regional offices of international organizations such as UNESCO and UNDP, development banks and various regional bodies. They can also collaborate with ICDE to further worldwide distance education: the Australian and South Pacific External Studies Association cooperated closely with the ICDE to plan and manage the 13th World Conference, held in Melbourne, Australia, in 1985. The emergence in 1987 of two new regional distance education associations, the Asian Association of Open Universities (AAOU) and the European Association of Distance Teaching Universities (EADTU), reflects not only the evolution of institutions from purely programme-related to a more collaborative stance, but also a growing realization that resources are more effectively used where regional economy of scale prevails.

The longest standing (by two months) regional distance education association is the African Association for Distance Education (AADE) which was founded as the African Association for Correspondence Education in Nairobi, Kenya, in June, 1973. The original permanent secretariat was located at the Correspondence Course Unit of the University of Nairobi. The Association aims to promote the knowledge and use of distance education, cooperation between members, staff training through regional seminars and workshops, and research. Both French and English were originally designated official languages of the Association and in 1982 three regional coordinators were named for North, West, and East, Central and Southern Africa (AACE, 1983). The Association is today headquartered in Zimbabwe, maintains regional coordinators for West, East, and Central and Southern Africa and continues to publish a newsletter (AADE, 1986). Another African association, the Distance Learning Association (Southern Africa) is mentioned in the literature (IEC/CET, 1987; Dodds and Inquai, 1987; Jenkins, 1980), and is reported to hold meetings and publish a newsletter.

The Australian and South Pacific External Studies Association (ASPESA) was conceived in 1972 at a Forum for External Studies held at the University of New England, Armidale, and established in August, 1973, at its First Biennial Forum. Its objective of promoting understanding and cooperation, high standards in distance education practice and information dissemination have been well served through its biennial forums, various workshops, research grants, a newsletter (*ASPESA News*) and, since 1980, the publication of a scholarly journal, *Distance Education* (Smith, 1984a, 1984b). The Association draws its membership primarily from Fiji, Papua New Guinea, New Zealand and Australia, but also has members from outside the region. The 1987 directory of ASPESA membership is a veritable 'who's who' of Antipodean distance education and lists almost 200 combined institutional and

individual members (ASPESA, 1987). ASPESA is an ICDE affiliate under a joint membership arrangement.

The Associacion Iberoamericana de Educacion Superior a Distancia is headquartered at UNED in Spain. Through its newsletter, *Boletin Informativo*, and conferences, it provides links between higher level distance education institutions and practitioners in Spain and Latin America (Daniel, 1987). During the ICDE 12th World Conference, a group of Latin American distance educators from Argentina, Brazil, Columbia, Cost Rica, Mexico and Venezuela formed the Asociacion Latinoamericana de Educacion a Distancia (ALED, 1983). However, it is unknown whether the group continued to exist. Although information from Latin America is sparse, recent reports (Joseph, 1986; Laaser, 1988) suggest that regional activity is increasing. The formation of a regional association appears imminent.

The Distance Education Council of Asia (DECASIA), an affiliation which arose in part from the impetus given regional distance education by the 11th Conference of the ICCE held in New Delhi in 1978, was founded at a regional distance education seminar hosted by Universiti Sains Malaysia in 1981. Unfortunately, following a 1983 DECASIA conference in Hong Kong, the association ceased to function. However, relationships formed by Asian distance educators in a variety of contexts, along with the astounding growth of distance education in the region, gave rise to the Asian Association of Open Universities (AAOU, 1987). The concept of the AAOU arose in late 1986 at the Regional Seminar on Distance Education held at STOU in Bangkok under the auspices of the Asian Development Bank and the regional office of UNESCO. Inaugural meetings and research conferences were held in Bangkok and Tokyo in late 1987. Members subsequently met in June, 1988, at STOU, the site of the Association's Permanent Secretariat, to discuss the establishment of a

regional resource centre for distance education and various other initiatives. It is anticipated that other Asian distance teaching institutions will join the AAOU and, more importantly, that the Association will play a key role in addressing educational needs in the region. AAOU's members are:

Indira Gandhi National Open University, India
Universitas Terbuka, Indonesia
University of the Air in collaboration with the
National Institute of Multi Media Education, Japan
Korea Air and Correspondence University, Republic of Korea
Allama Iqbal Open University, Pakistan
Open University of Sri Lanka, Sri Lanka
Sukhothai Thammathirat Open University, Thailand

The establishment of the European Association of Distance Teaching Universities is yet another example of how evolution in distance education has given rise to new forms of collaboration. The EADTU was founded in January, 1987, at a meeting in Heerlen, the Netherlands which assembled an imposing array of distance education institutions and organizations (EADTU, 1987a). The founding members are:

Vlaamse Interuniversitaire Raad, Belgium
Jutland Open University, Denmark
Deutsche Institut fur Fernstudien an der Universitat Tubingen,
Federal Republic of Germany
Fernuniversitat, Federal Republic of Germany
National Distance Education Centre and National Institute for
Higher Education, Republic of Ireland
Consorzio per l'Universita a Distanza, Italy
Open Universiteit, the Netherlands
Norwegian Association for Distance Education, Norway
Projecto Universidade Aberta, Portugal
Universidad Nacional de Educacion a Distancia, Spain
The Open University, United Kingdom

and subsequently,

Federation Interuniversitaire de l'Enseignement a Distance, France

The EADTU has set a number of tasks for itself including the development of a directory in cooperation with the International Centre for Distance Learning, Milton Keynes, and studying the feasibility of credit and course transfers, course translations and joint course development projects between its members. The Association has also placed itself to take advantage of EC programmes such as ERASMUS, COMETT and DELTA, as well as SATURN (an industry - distance teaching partnership) and PACE (the European Programme of Advanced Continuing Education), initiated by major companies in computing and communications). EADTU has also stated its intention to maintain a relationship with the ICDE and to assist distance education institutions in developing countries (EADTU, 1987b, 1988a, 1988b, 1988c).

Another European organization, the Association of European Correspondence Schools, was formed in 1985 by the merger of the European Council for Education by Correspondence and European Home Study Council. The AECS has over 70 members from 17 European countries, deals primarily with non-university level education, runs workshops and conferences, publishes the journal of correspondence education, *Epistolodidaktika*, and offers a Diploma in Correspondence Education by correspondence (AECS, 1985, 1987; Daniel, 1987; IEC/CET, 1987).

The recent establishment of particularly the AAOU and EADTU reflects important trends in distance education. First, networking among distance educators is facilitated by the acquisition of and familiarity with modern communications technologies. Second, these regional associations identify their considerable power

to attract the attention of private sector companies and organizations with an interest in training, education and communication, and international and donor bodies operating at the regional level. Finally, there is a growing realization that collaboration can serve the associates in appropriate regional training schemes for distance education practitioners, relevant research and development, and other joint ventures. It is important, however, that these powerful regional associations do not obscure the needs of non-affiliates operating in other sectors of higher level distance education.

International Associations

There are several international associations with more than a passing interest in higher level distance education. Some of these, especially bodies dealing with educational technology, communications and the media, adult and continuing education and, in general, educational theory and practice, have come to appreciate that distance education is not only providing relevant and progressive models, techniques and expertise, but is also the fastest growing sector of higher education.

The International Council for Distance Education is the pre-eminent world organization dedicated to furthering the aims and methods of distance education. The ICDE promotes and funds research and scholarly publications, encourages the formation of national and regional distance education associations, facilitates communication and information exchange, and organizes conferences and workshops (ICDE, 1987). By the end of 1986, the Council represented some 90 institutional members and 465 individual members in 52 countries. The memberships reflects a wide variety of approaches to distance education: private and public correspondence

schools; rural development projects; extension, continuing and adult education; teleconferencing networks; open colleges and universities; consortia of conventional institutions; community education projects; and many others. The ICDE has an elected executive body with representatives from all regions, standing committees for administering visits, exchanges and workshops, the Women's International Network, and research and constitutional review, and has a number of active special interest groups. The Council also promotes information networking through its international liaison officers, some 40 individuals in 34 different countries. At this 14th World Conference, the ICDE not only celebrates its 50th anniversary, but also marks the establishment of its Permanent Secretariat in Oslo, Norway.

The ICDE was founded in 1938 in Victoria, British Columbia, as the International Council for Correspondence Education. For its first twenty years it was predominantly North American in membership, interested in correspondence methods for school children and college students using the single medium of print, and represented both private and public sector educators. At the Stockholm Conference of 1965, the Council became truly international with 200 delegates from 27 countries in attendance. In 1982, at the 12th World Conference held in Vancouver, the ICCE's name was changed to the International Council for Distance Education and its steady growth of membership and activity in the 80s parallels the expansion of global distance education. The participation and interest in this Oslo World Conference bears testimony to the importance of the ICDE and the high regard in which it is held. Additional information on the ICDE is available to the participants of this Round Table, including an official history of the ICDE (Smith, 1988).

With the establishment of its Permanent Secretariat in Oslo, the ICDE has provided an important base for consolidating its on-going initiatives and launching a range of

new activities. Distance education is a growing force and, therefore, can be expected to give rise to greater numbers of practitioners, programmes and institutions. Recent trends indicate that we can expect to see new national and regional distance education associations being formed, some on a sizeable scale, a profusion of collaborative undertakings, new applications of technology, and an overall increase in networking at all levels. As well, distance education is recognized by governments, and international and donor bodies, as providing educational opportunity and impact in development. There is a stated need for mechanisms which enable efficient and effective matching of resources to needs. In each of these instances, strong and professional leadership is essential for facilitation and coordination. The ICDE Permanent Secretariat, Executive and Membership will provide such leadership.

In the immediate future, the ICDE will increase liaison and communication with its membership, and will extend its contacts and relationships with international bodies with an interest in distance education, for example the International Association for Adult Education and the International Council for Educational Media. There is also a perceived need to extend the existing collection of data on worldwide distance education operations so as to provide accurate and detailed information for policy making and funding bodies. To carry this out, to strengthen information collection and dissemination, and to provide a sound basis for standardizing research and development initiatives, the ICDE intends to explore mechanisms which further information networking. Finally, the Council will actively explore methods for assisting distance educators in developing regions to build on their considerable existing programmes.

Summary of Trends

6. Emergence of strong associations in regions and nations where distance education is strong;

7. Increasing regional and international networking;

8. Networking crosses boundaries of traditional educational systems;

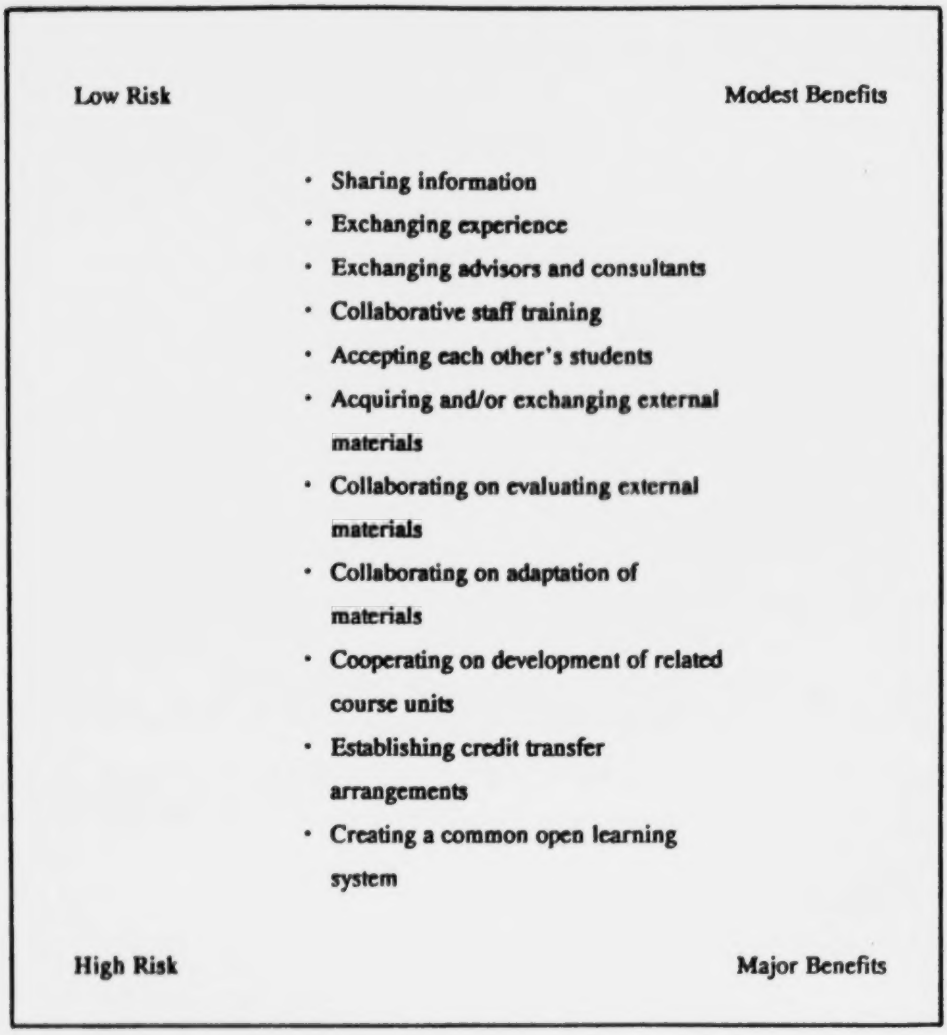
9. Use of associations for collection and dissemination of information, training and forging links with international bodies and industry; and

10. Increasing use of new technologies for communications between associations.

Evolution of Collaboration in Distance Education

Collaboration is treated as a separate topic in order to isolate some interesting recent examples. Certainly the formation of distance education associations, referred to in the previous section, represents one form of collaboration and provides a base from which other collaborative activities can be launched. As an example, witness the formation of the Norwegian Centre for Distance Education in May, 1988. Intended to facilitate research and innovation, it is a joint venture of the Norwegian Association for Distance Education, Norwegian Correspondence Institute (NKI) and Norwegian Correspondence School (NKS). The Centre will share some administrative functions with both NADE and ICDE (R. Roll, personal communication). Collaboration among distance educators is growing apace and it is impossible to survey all such activity. In addition, much that is recent is undocumented and one must depend on reports from those involved. Accordingly, a series of vignettes is presented in this briefing paper: they reflect collaboration at the local level, bilateral (including inter-institutional) arrangements and multi-lateral ventures. Other examples point up the growth of the 'knowledge industry' where the public and private sector collaborate, and how communications and computer technology are being employed in new types of joint ventures. Although collaboration is infrequently addressed in a generic fashion in the distance education literature, there have been several recent papers of interest including Calvert (1986), Daniel (1987), Daniel *et al.* (1986), Moore (1988), McClean (1986), Mugridge (1983), and Swift (1986). Recent work on Commonwealth cooperation provides an overview of collaboration in Africa (Dodds and Inquai, 1987), Asia (Jenkins, 1987) and the Commonwealth as a whole (IEC/CET, 1987). Of these, Daniel and his colleagues cover a wide range of conceptual frameworks concerning collaboration.

The following figure indicates the risks and benefits arising from various types of collaboration. It is reproduced from "Commonwealth Cooperation in Open Learning", the Summary Report of a study carried out for the Commonwealth Secretariat by the International Extension College and the Council for Educational Technology (IEC/CET, 1987) with slight modifications by Daniel (1987).


Low Risk
Modest Benefits
• Sharing information
• Exchanging experience
• Exchanging advisors and consultants
• Collaborative staff training
• Accepting each other's students
• Acquiring and/or exchanging external materials
• Collaborating on evaluating external materials
• Collaborating on adaptation of materials
• Cooperating on development of related course units
• Establishing credit transfer arrangements
• Creating a common open learning system
High Risk
Major Benefits

Local Collaboration

Of many available examples, the establishment of 'Contact North', the Northern Ontario Education Access Network, is the most ambitious. The Province covers 450,000 square miles and is Canada's most heavily populated and industrialized. Although the northern part of Ontario encompasses 90% of its area, it has only 10% of the population, about 650,000 people. In 1986, the Provincial Government created the Access Network with funding in the amount of approximately 16 million USD over four years. Forty per cent of this amount is held in the Northern Distance Education Fund to cover costs of courseware development. The Network has coordinating centres, each consisting of a college and a university working cooperatively, and serves over 25 communities through site coordinators. Any provincial non-profit group, secondary school, college or university can use the Network to deliver distance education courses using a combination of means including print, audio and video media, teleconferencing and computer communications. The Network is governed by community, government and institutional representatives and has placed a high priority on research and evaluation across a wide range of distance education topics. The Education Fund has been used for the collaborative development of a degree programme in nursing and for planning courses in such diverse subjects as public administration, forestry and teacher upgrading (Contact North, 1988; Croft, 1987; Roberts, 1987). This venture is compelling in its range of collaboration, from joint course development and project management to comparative research and multiple utilization of courses. It is also interesting to note that the project did not create a new institution or fund hardware only.

By contrast, the Governor of Hong Kong announced in late 1986 the establishment of a new degree granting institution, the Hong Kong Open Learning Institute (HKOLI). The Institute will not only develop its own programmes, but will also acquire distance education course materials from off-shore providers and the five Hong Kong institutions funded by the University and Polytechnic Grants Commission (University of Hong Kong, the Chinese University of Hong Kong, City Polytechnic of Hong Kong, Hong Kong Polytechnic and Hong Kong Baptist College). Although initial emphasis is at the degree level, it is expected that technical, vocational and continuing education programmes will be offered eventually. Enrolment in HKOLI courses will be open and not dependent on previous academic achievement (I. Mugridge, personal communication). Planning of this collaborative distance education venture has involved not only representatives of the five Hong Kong institutions, but also the private sector, government departments and experts from Australia, Canada and the United Kingdom. To some extent, the willingness to undertake this experiment is based on the successful experiences of the Open University Consortium of British Columbia (Mugridge, 1987) and the Open College of the University of East Asia (Macau). The Open College, described in detail by Swift (1986b), employs a model in which distance education degree courses are imported from New Zealand, the U.K. and Canada.

Both these examples of local collaboration indicate how valuable prior experience is in giving rise to new ventures, sometimes of rather remarkable scope. The need to share knowledge and information is also evident and confirms the utility of mechanisms which facilitate it. Distance educators' experience attests that much collaboration begins simply, between like-minded individuals or small groups, and that it stands a better chance of success when participants interact at early planning stages.

Bilateral Collaboration

The most common and persistent pattern of collaboration in higher level distance education involves two institutions, usually but not exclusively with support from an aid agency. Bilateral collaboration ranges from exchanges of information to adaption of course materials as in the case of New Zealand's Massey University and the University of the South Pacific's development of religious studies material (IEC/CET, 1987). Sukhothai Thammathirat Open University and the Japanese University of the Air/National Institute of Multi Media Education are co-producing material on the rice culture in both national languages (W. Srisa-an, personal communication). Other examples are numerous. The Open University established its Centre for International Cooperation and Services after undertaking over 70 projects in 14 countries between 1974 and 1976 alone (The Open University, 1978). The International Extension College, Cambridge, has a rich history of bilateral collaboration as well, with a primary emphasis in Africa (Dodds and Inquai, 1987). In recent years the Canadian International Development Agency, recognizing the substantial development impact of distance education, has funded some of the longest running and largest projects yet seen (CIDA, 1987a). Australia, New Zealand, several European countries and Japan also have supported exchanges although not all bilateral activity is 'North-South.'

The Indonesian national open university, Universitas Terbuka (UT), was established in 1984. In June, 1988, UT had enroled 137,000 students, produced 420 courses and had 620 staff in place (A. Suparman, personal communication). In the intervening years an entire campus has been built in south Jakarta and requisite operating systems have been emplaced. The Canadian International Development Agency approved in early 1985 a one-year bilateral project between UT and the

Open Learning Institute with the broad purpose "... to provide Universitas Terbuka with the information, ideas, systems, procedures and advice which will help the university meet its immediate and pressing problems." Two strategies were employed: a counterpart programme for senior administrators of equivalent positions at the two institutions and a training scheme for UT course developers. A second phase of the project was also supported by CIDA and will run from 1986 through 1989. It involves collaboration across a range of areas including the development of test item data banks, registration systems, research capacity, warehousing and distribution, publishing and institutional management. Operated under subcontract to a conventional British Columbia university, the project also includes a split Masters degree programme for some 30 young UT distance education practitioners. The two institutions have recently proposed a five-year third phase of the project which continues through 1994 the development of key operational areas within UT and includes post-graduate education at the Masters and Doctoral levels for UT staff. Of interest is the proposed development of parallel distance education course material in Indonesian and English for training researchers at both institutions. The value of the three phases of the project, on-going and proposed, exceeds eight million USD (OLA, 1988).

Multilateral Collaboration

As collective experience grows, a variety of new collaborative ventures is appearing and some of the more recent are of imposing magnitude.. This points up an apparent paradox which is in fact one of the key issues of collaboration. The authors of a Commonwealth study (IEC/CET, 1987) remind us that: "the *costs* of collaboration, whether, monetary or non-monetary, are directly related to the number of parties

collaborating and the relationship is a power law rather than linear." Yet it seems clear that the *outcomes* of collaboration rest on economies of scale and can be to the advantage of participants (emphasis on costs and outcomes is mine). However, there is no real paradox here, only a warning that collaborators must ensure that the combined quantitative and qualitative benefits justify the expense and effort of planning and setting up the venture. Many have solved the equation successfully and many useful experiments in collaboration are now in progress.

Dodds and Inquai (1987) cite successful multilateral collaborations in Africa involving information exchange, materials sharing and joint course production, joint programme development and staff development. There have been important advances in collaborative, multinational research projects as well. Barker *et al.* (1986) describe a study on student persistence in distance education which emanated from discussions at ICDE's 12th World Conference in Vancouver in 1982. The research model was developed and applied by distance educators in Australia, Canada, Pakistan and the South Pacific. A current collaborative research project, now nearing completion, was launched in 1984 with support from the International Development Research Centre's Singapore office (Neilsen, 1984). The Asian Distance Education Research Group originally included Allama Iqbal Open University, Pakistan, Ramkhamhaeng University, Thailand, Universitas Terbuka, Indonesia, and Universiti Sains Malaysia, but has expanded to include the East China Normal University based in Shanghai. Although undertaking different research at each site, the group meets frequently to discuss the projects and offer each other feedback. This collaborative research network will produce its findings in 1988 and a monograph should be available by 1989 (G. Dhanarajan, personal communication).

An interesting example of two bilateral projects coordinated by a developing country distance education institution to a common purpose involved Deakin and Murdoch Universities of Australia and the Open Learning Institute of Canada collaborating with the Centre for Off-Campus Studies at the Universiti Sains Malaysia to develop science, and social science and humanities degree courses, and a system for producing them. The project is described in considerable detail by Jenkins (1987). Familiarity among the participants in part provided a base for a coordinated off-shore distance education degree programme through a private sector Malaysian operation, Disted Services (Dhanarajan, 1987; Dhanarajan and Mugridge, 1988). Disted delivers courses produced by institutions in England, Canada and Australia to students in Malaysia, Singapore and Brunei. Several models for joint venture agreements emerged (see for example OLI/DISTED, 1987) and the providers rapidly established a consortium to forestall duplication and competition, share information, and explore cross-accreditation and cooperation in supporting Disted. The Commonwealth Secretariat in 1986 launched a study to determine the feasibility of establishing an open university to serve the nine countries of SADCC, the Southern Africa Development Coordination Conference (Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe). The venture resulted in a proposal (Jevons *et al.*, 1987), much useful discussion and an appreciation of problems facing such a venture. Another Asian example of collaboration to address an important need in distance education, that of training media specialists, saw 22 participants from 10 Asia countries, and from Australia, Canada and the United Kingdom, meeting in 1987 with the Asian Mass Communication Research and Information Centre (AMIC) to define training needs and lay the foundation for a current proposal to establish a pan-Asian training and information network. Seventeen different distance teaching institutions were involved (Mehra and Menon, 1987).

The major example of multilateral collaboration in higher level distance education, an initiative which has focussed world attention, is the announcement in 1987 and subsequent planning for the 'Commonwealth of Learning.' The process of formulating the proposal for the initiative rests on three years of discussion by many Commonwealth distance educators (Commonwealth Secretariat, 1985, 1986a, 1986b, 1987). Detailed planning of the project is in process as this is written and a clearer picture of the organization will emerge at this ICDE conference.

Knowledge Industry

Broadly speaking, the knowledge industry refers to entrepreneurial activity which provides learning opportunities. Much formal higher education is conducted by correspondence schools operating wholly or in part for profit. Private industry spends enormously on training and education. What is interesting is an apparent trend toward collaboration between public distance teaching institutions, the private sector and, on occasion, with involvement by governments. In many cases, collaboration reflects technological advances, particularly in telecommunications and computing. The knowledge industry may trouble more conservative educators, but there can be little doubt that it perpetuates new models of collaboration and aggressively tests applications of new technology. Therefore, it is in the interest of higher level distance educators to monitor these developments. Two examples carry the the point.

In late 1986, the State Government of Victoria, Australia, established Knowledge Victoria Limited, a wholly Victoria Government owned company with a mandate to stimulate the development and delivery of appropriate technology-based training

programmes in open learning contexts, both within Australia and overseas markets. The company is establishing a database of knowledge resources in the State and, in conjunction with government departments, industry and commerce, and the higher level public education system, is establishing syndicated consortia to produce learning products (Knowledge Victoria Limited, 1988) One such product is a recently completed 'Video Book of Surgery,' a series of videotapes for general medical practitioners who have fallen behind in office surgical procedures with the effect that a greater number of referrals are made to hospital-based surgeons to the financial and logistical detriment of the health care system (S. Murby, personal communication). Knowledge Victoria has studied distance education institutions in Asia, Europe and North America to discover collaborative potential.

The National Technological University, with 22 member engineering institutions, was founded in 1985 in the United States. Universities providing higher level distance education programmes to the NTU include Stanford and the Massachusetts Institute of Technology. NTU's parent organization is the Association for Media-Based Continuing Education for Engineers (AMCEE), a consortium of engineering colleges which provided initial funding for the Technological University, as did commercial businesses and government agencies. NTU now provides more than 4000 hours of academic credit instruction (Gellman-Buzin, 1987) and includes leading corporations among its subscribers, for example AT&T, Boeing, Kodak, General Dynamics, IBM, NASA, NCR, and RCA to name but a few, along with numerous government agencies (Utsumi *et al.*, 1988).

Summary of Trends

11. Increased sharing of expertise among developing countries as well as from developed to developing countries;

12. More educational programmes that cross national boundaries;

13. Increased sharing of technological facilities and resources;

14. Increased emphasis on strengthening local skills; and

15. Partnership with entrepreneurial bodies.

Evolution in the Application of Technology in Distance Education

Educational providers are struggling to cope with the proliferation and effects of technology. So, too, are those in every other human undertaking. Distance educators have demonstrated that they are among the most willing and skilled in testing and applying technology to serve both learners and teachers. This section of the briefing paper can not possibly begin to address technology itself, let alone the vast number of its applications in higher level distance education. Rather, it is the intention here to demonstrate that distance education practitioners are using every available medium and technology, and attempting to apply them sensibly in situations so diverse as remote rural areas with no electricity to the most advanced urban centres. What we have learned is that each context imposes its own requirements and constraints, and gives rise to unique solutions. To identify trends in higher level distance education, I have arbitrarily defined three areas where distance educators are experimenting with and utilizing technology: 1) for producing course materials; 2) for distributing them and supporting learners; and 3) for supporting the operations of distance education systems. Some recent examples of each are described and some of the recent literature is identified.

Applications for Production

Print is the most widely used medium in distance education, attesting to its flexibility, relatively low expense, portability, and familiarity to both producers and users. It is surprising that distance educators have written so little on this medium, attracted perhaps by more alluring newer media. However, those interested in print

and its production can consult Cowper and Thompson (1982), Dodd (1981), Duffy and Waller (1985), Flower (1987), Jenkins (1985), Lefere (1984), Pittman (1987), Rumble (1988), Runquist (1985) and Timmers (1987a, 1987b). While printed course materials can be developed at any level of technology, computerized word processing and digital transmission have radically altered the medium. Jenkins (1987) describes in detail how rapidly and successfully a digital course development system can replace a mechanical system as it did in 1984 and 1985 at the Centre for Off-Campus Studies, Universiti Sains Malaysia. The ease with which simple, inexpensive print development systems can bridge the 'technological gap' is revealed ancedotally by the comment of an expert from a developed country who, on viewing USM course materials, was embarrassed to admit that Off-Campus Centre staff should be training his institution's course developers, not vice versa! At Universitas Terbuka, microcomputers, optical scanners and laser printers are used to prepare production-ready manuscripts. This level of sophistication exceeds that of many distance education institutions in developed countries and suggests potential for regional training schemes and 'South-North' flow of expertise. Computerized print development and production are now used in every world region, although not extensively in some. There is a growing need for training in print development and in using and maintaining relevant digital technology. Some experiments in transmission of digitalized manuscripts have been attempted (Timmers, 1987a) and could form the basis of future joint course development collaborations.

Audio- and, to a lesser extent, video-cassettes have been used in preparing distance education courses. Durbridge (1984), Laaser (1986) and Leslie (1986) have reviewed in detail the use and implications of audio-cassettes and Power (1987) describes the integration of print, graphics and audio, a technique he calls 'audio-graphics', which has garnered the interest of distance education course designers from developing

country institutions. The use of audio-cassettes has grown in some quarters, for example at The Open University, but nevertheless presumes availability of equipment and prerequisite skills for integrated media design and development. Stephen Brown (1984) reviewed the development and use of video-cassettes and Sakamoto (1987) reviewed both audio and video and presented recommendations for their use in the Asian context. A number of others have discussed audio and video media in the national context (Agrawal, 1987; Kotalawele, 1987; Puriveth, 1987; Sirajul Islam, 1987b; Srisa-an, 1987b, 1987c; Usman, 1987). Optical disc (videodisc) technology is being tested at a variety of sites mainly in developed countries for its possible use in distance education courses. Computer-based instruction is being employed also, but again with a focus in more developed areas (see for example Bates, 1984b; Ruggles *et al.*, 1982; IEC/CET, 1987; Sharon 1987, 1988). Shobe (1986) predicts the growing use of videodisc technology in distance education on the basis of its capacity to integrate a wide range of media in courseware, its durability and long shelf-life, and decreasing cost. Zygmont (1988) describes new generation interactive compact discs and indicates how commercial interest in the technology is spurring its availability.

New technological applications in the development and production of courses is of great interest to distance educators who are at the same time mindful of selecting appropriate technology in a particular context. There is a human dimension to account for, too. Naidu (1987), writing about course development at the University of the South Pacific, reminds us of this other factor in instructional materials development, "the availability of suitable support services such as audio/visual/graphics assistance and editorial help, etc. Usually such assistance is limited - due mainly to financial constraints - but where they are available, their use is somewhat dependent on course writers' perceptions of what goes into instructional materials design."

Applications for Distribution and Support

There is an immense volume of distance education and related literature on applications of technology for distribution and support in higher level distance education systems. The three most commonly addressed (with apologies for overlap) are broadcast, satellite and teleconference. On the broad topic of distribution and support technology, interested readers are directed to Rushby (1987) who has compiled 41 papers on technology-based learning originally published between 1981 and 1986 in the journal *Programmed Learning and Education Technology*, as well as other work by Bates (1984b, 1985, 1986), Mugridge and Kaufman (1986), Ruggles *et al.* (1982) and P. Smith (1987). Radio broadcast has been mentioned earlier and radio and television applications are covered in detail in ADB (1987), Bates (1981, 1984a, 1988a), Kinyanjui (1975) and McCormick (1985). The use of satellite technology for distance education is addressed variously by AMIC (1985), one of the best single-volume references on satellites, and by Bates (1988b), Bhatnagar (1987), Farrell and Pacey (1987), Helm and Stahmer (1987), International Institute of Communications (1987), Rajan (1987), Stahmer (1987), Stahmer and Helm (1987), Stahmer *et al.* (1987), Stephens and Stoddard (1988) and Worlock (1987). Teleconferencing, including computer conferencing, audio conferencing, video conferencing and combinations of these are of interest to distance educators, especially where the technology is available and communication infrastructures support the activity (Harasim, 1986; McConnell, 1984; Roberston, 1986; Robinson, 1984 are a few of the many available papers on the subject).

A few examples indicate that there is considerable expertise in applying technology for distributing and supporting distance education in developing countries. Broadcast television is a central element in higher level distance education in China where it is

intended that 25% of all students in higher education will learn 'at a distance' by 1990. In a system where 1.3 million candidates sat for the same adult higher education entrance exam on the same day in 1986, and where eight million unqualified primary and middle-school teachers are identified as needing television-led distance education, one is impressed by the country's response. By 1987 there were 530 distance teaching institutions with 563,000 students along with 10,000 receiving centres for television education. Television is distributed in part by satellite and 700 ground stations had been built by 1987 (Zhou, 1987a, 1987b). Satellite-mediated communication for distance education administrative and teaching purposes at both the University of the West Indies and the University of the South Pacific has been mentioned earlier and is widely known. In India, the earlier SITE (Satellite Instructional Television Experiment) laid the base for subsequent INSAT TV developments (Sampath, 1985). Universitas Terbuka uses the national satellite for television distribution and two-way SSB radio, and has also experimented with computer conferencing (Idris, 1987; Rajan, 1987). In Thailand, Guelph University of Canada and Sukhothai Thammathirat Open University are collaborating to test VITAL (Versatile Interactive Teaching and Learning), a system permitting course authoring and student interaction with the system (Moore, 1988). Finally, Alsagoff (1987) reports that audio teleconferencing is being tested for its utility in tutoring arts and science students at the Universiti Sains Malaysia.

Distance educators are beginning to test even more recent technology. Fibre optics, by providing for a half billion bits per second of digital data movement (for comparison purposes you are now reading this at about 300 bits/second and most personal computers telecommunicate at a 'fast' 1200 bits/second) will change the way we think about learning (Brand, 1987). The University of Regina in Saskatchewan is now delivering distance education by fibre optics (J. Calvert, personal communication).

Applications for Internal Operations

Little has been written about technological applications which support the internal management of distance education systems, although this is potentially a fruitful area for new development and sharing both software and expertise. For a general background, see Bottomley (1986), Curran (1985), Friedman (1982, 1984), Lampikoski (1982), Mugridge (1985) and Timmers and Mugridge (1986). In general, computer technology has been applied for student registration and management, warehouse management and stock control, financial management, project planning and management, and overall system integration through the establishment of local area networks. Some of the software developed for integrating distance education systems is on the leading edge of innovation. As an example, such software developed at the Open Learning Agency of British Columbia was recently sold directly to companies such as Dow Chemicals of Texas, Hughes Aircraft and Massachusetts General Hospital.

Universitas Terbuka is currently emplacing elements of its management information system. With some collaboration from Canadian colleagues, UT administrative and technical staff have developed a registration and student management system capable of handling large enrolments, and have constructed sizeable test item databanks for compiling exam papers that can be optically scanned and digitalized for ease of management. As the power of microcomputers has increased, distance education innovators are demonstrating that integrated management systems can be simple to use and relatively inexpensive. For example, when the Open Learning Institute and Disted Services of Malaysia agreed to collaborate in enroling Asian students in an off-shore distance education programme, they realized that parallel registration and student management systems would facilitate the venture. Accordingly, Institute

information systems staff developed 'Registar', 4th-generation language software which handles up to 10,000 students, manages tutors and study centres, finances and stock control, and permits virtually limitless flexibility in generating reports and research data. The software is all the more impressive because it runs on a variety of readily available microcomputers including IBM personal computers and their clones, can be configured for multiple workstations and instantly upgraded to minicomputer or mainframe status if enrolments warrant a larger system - all of this for about 8,000 USD. Discussions are currently underway to install the system at al-Quds Open University where an Arabic version would be developed by QOU staff.

In summarizing the use of technology in distance education, Mohammad Selim (1987), a higher education specialist from UNESCO's regional office in Bangkok, reminded participants at the recent ADB seminar on distance education: "Exchange of information on the experiences of the various institutions, keeping in view the future need in the context of rapid technological changes, merits serious consideration. It may also be worth exploring how facilities could be shared by other institutions both within and between countries particularly for basic science and engineering courses. This may possibly help avoid or at least reduce costly mistakes and duplications." His comments reflect the view of most distance educators that distance education provides an ideal testing ground for technological application, great care is to be taken in selecting appropriate technology for specific contexts and, although much innovation originates in developed areas, some of the most impressive and large-scale applications of technology are underway in developing areas. This indicates the potential for interaction between distance educators, both in terms of transferring technological applications and sharing accumulated experience. Kevin Smith (1987) presents a reflective and useful summary of many issues in his paper "Distance education: touching with technology" presented to participants of a CIDA-

AMIC seminar on training needs for media specialists held in Singapore. Finally, as Timmers (1987b) points out: "As alluring as technology may be, human skills and creativity will continue to determine whether technological gadgets are employed efficiently in carrying out our primary task - the education of disant learners."

Summary of Trends

16. Decreasing cost of electronic technology for print and video production extends use to developing countries;

17. Increasing use of satellite for delivery of instruction in developing countries;

18. Large enrolments in developing country programmes encourages use of technologies that manage large amounts of information or enable wide distribution; and

19. Increasing use of computer technology for management and internal operations.

Evolution of Databases and Information Networking in Distance Education

Each of the previous sections of this briefing paper indicates how fundamental the flow of information is in the evolution of higher level distance education. We have established in a very short time many mechanisms for disseminating information, ranging from newsletters and scholarly publications to seminars and conferences. There is also a growing appreciation that our innovations and developments must spread outside the bounds of distance education itself - to educators in general, to policy makers in government and international bodies, to those who develop technology and who must be reminded continually of how we wish to apply it and, most important, to prospective learners who seek encouragement that their needs are being addressed. In every case, it is imperative that we continue to give high priority to the development of mechanisms both for collecting and ordering information and for its distribution.

Databases constitute a rapidly growing category of information whose importance stems from the fact that an increasing proportion of information is now being created in electronic form. In 1979, there were 400 publicly or commercially accessible electronic databases around the world, created by 221 database producers and distributed by 59 on-line service vendors. By 1986, however, the number had increased to over 3,000 databases created by some 1,500 producers and distributed by about 450 vendors and some 50 'gateway' firms providing access to a number of vendors (Communications Canada, 1987). Database use in higher level distance education has grown recently, both to serve students and educators in local or national systems, and to facilitate networking for distance educators on a wider scale. 'MARIS-NET', established by the National Extension College and Scottish Council or Educational Technology, went on-line in 1985 and is intended to help students

and educators find their way through more than 7,000 open learning packages offered by over 300 producers in the U.K. (Freeman, 1986). An even more ambitious project, the Education Counselling and Credit Transfer Information Service (ECCTIS) was established in 1983 and now provides computerized data on all post-school courses of more than six weeks duration and leading to some kind of qualification. It is expected that ECCTIS will have more than 60,000 entries this year (Frogbrook, 1983; Taylor, 1987) and it has been suggested that before long 80,000 entries will be available in videodisc form (Commonwealth Secretariat, 1987). In Canada, the Open Learning Agency recently established the Discovery Training Network which is currently developing a database and information service on distance teaching materials in North America. In about one year, the database has been developed to contain information on 10.000 British Columbia courses and programmes as well as over 165,000 independent learning courses, workshops, seminars and conferences available in Canada and the United States (DTN, 1988a, 1988b). The software which runs the database has artificial intelligence capacity providing users with very fast and specific answers to general queries (G. Burson, personal communication). Each of these systems, and several others, demonstrate considerable competence in database development and management. There are two important factors to note, however. Access to databases, particularly by students, continues to be a vexing problem and can lead to the downfall of systems. On the positive side, databases are of interest to governments which are sensitive to the educational demands of their constituents.

The International Centre for Distance Learning (ICDL), which operates from facilities at the Open University, was set up in 1983 with the support and cooperation of the ICDE, Open University and United Nations University (UNU). It is a rèsource collection and computerized database which plays a central and

expanding role in distance education information networking (Harry, 1983, 1986, 1987; Perry, 1984). The document collection has three main sections: general and theoretical works; course materials from different institutions; and a collection of prospectuses, reports, journal articles and papers relating to distance teaching in over 80 countries at all educational levels. A subject index, currently being computerized, covers all new documents received. The Centre also maintains a computerized database of basic information on distance teaching institutions which by 1985 covered over 500 entries, and it distributes its quarterly accession list to over 50 countries. A new on-line database for bibliographic information has been established, in part at the initiative of a Bibliographic Database Working Group which came together at the 13th ICDE World Conference in Melbourne in 1985 (Castro, 1988). Keith Harry, the Centre's Documentation Officer, speaking at the UNESCO International Consultation on Higher Level Distance Education in Australia last year, identified four main inter-related reasons for the current wide recognition of information and documentation work: 1) the proliferation of distance teaching institutions and projects; 2) the improved status of distance education; 3) the rapidly expanding literature; and 4) the greater accessibility and transferability of information made possible by new technology. Harry (1986) eloquently stated the inescapable requirement for information networking among higher level distance education institutions and practitioners:

> "Cooperation is central to ICDL's activities. There is a great deal to be gained from cooperation and collaboration in the areas of information and documentation, for a variety of reasons. Most notably, many institutions worldwide are realizing the benefits to be gained from an awareness of developments in distance education in other parts of the world, and are making attempts to collect documentation. It is important that the literature be identified and made accessible as quickly and as comprehensively as possible.

> ICDL assists this process by producing and distributing its quarterly new accession list, and the new database will represent a great step forward in literature searching. No single unit can cope adequately, however, with all documentation that is now appearing. It is essential that the database system which is now being developed allows for transfer of information out of ICDL into other databases which are being established by Working Group members and by other workers in the area, and into ICDL from other parts of the world."

The ICDL is unarguably the leading centre for distance education information resources. Commonwealth higher level distance education specialists recognized the importance of the Centre in 1985 and urged the Commonwealth Secretariat and other agencies to support its endeavours to achieve more secure funding (Commonwealth Secretariat, 1985). The ICDE formally resolved to support the Centre at its 13th World Conference (ICDE, 1986) and has provided financial support for the period 1986 to 1988 to supplement its funding from the UNU (Harry, 1987). Various studies leading up to the proposal for a Commonwealth distance education institution also identified the importance of the ICDL and the proposal itself recommends that the new institution work closely with the Centre (Commonwealth Secretariat, 1987). Finally, it is reported that the British Government has decided to support the ICDL as part of its in-kind contribution to the 'Commonwealth of Learning' (ICDE, 1988).

Distance education is at a critical point in its evolution with respect to information. We must decide now how we are to deal with information networking and this presumes that we address several important questions: 1) Are we willing to address the issue of democratizing the flow of information from its traditional repositories in developed areas, with the attendant consideration of providing financial resources in developing areas for managing information?; 2) Can we establish regional centres for

information collection and dissemination on a mutually agreed basis?; 3) Can we agree on the form of a network for distance education information and a common set of rules to govern standards?; and 4) Can we attract the support required to establish an effective worldwide information network for distance education? In answering these questions, distance educators should be aware that new technology and improved communications have dispelled the earlier notion that a database is held only at a central site surrounded by a number of subsidiary regional 'feeders' (the 'octopus' model). Current technology permits a cellular or distributed model where each site in the network contains all the information and the system is designed with built-in training and internal rules governing the entry of data (M. Battistel, personal communication).

Some of the best international networking has been done in the area of agricultural research (Adams and Dixon, 1986; Woods and Lysen, 1985). Plucknett and Smith (1984) identified seven factors for the success of these networks and they are paraphrased here as they are equally relevant for distance educators:

- Information needs are clearly defined and realistic agendas for networking activities proposed;
- The network addresses widely shared needs;
- Participants in the network have a strong sense of self-interest;
- Participants are willing to commit resources such as personnel and facilities;
- Outside funding is available to develop the network and keep it running for at least the first few years;

- Participants are sufficiently trained and experienced to make a contribution; and

- The network is guided by strong and efficient leaders who have the confidence of the participants.

In providing specific reasons for supporting database development (and I include information networking), Rose and Cady (1986) list the following:

- Reduces the cost of information retrieval and transfer;

- Makes information available on a more timely basis;

- Forces abstraction of important information from available sources for efficient storage and transfer;

- Helps identify major gaps in information and directs research and data collection efforts into high priority areas;

- Facilitates systematic analysis of major problems and questions;

- Standardizes data collection and reporting of research findings;

- Improves data quality control through standardized procedures, including error checking programs;

- Supports integrated planning activities and integration of different types of information;

- Helps coordinate related research and development projects;

- Expedites appropriate management decisions and reduces liklihood of poor, uninformed decisions;

- Avoids duplication of research and data collection efforts;
- Enhances training and technical backstopping;
- Reduces language communication problems and translation costs; and
- Reduces the risk of information being lost.

Summary of Trends

20. Increasing interest in and support for a worldwide network of distance education information;

21. Growing tendency to establish regional clearinghouses for collection and dissemination of information; and

22. Increasing use of computer technology to manage databases and facilitate access.

Recent Trends in Distance Education

1. Continuing expansion of higher level distance education through establishment of new open universities and other programmes;
2. Emergence of variations on the open university model;
3. Inter-institutional collaboration facilitated by technology;
4. Assignment of national, state or provincial coordinating responsibilities;
5. Delegation of administrative functions to coordinating institutions or brokers;
6. Emergence of strong associations in regions and nations where distance education is strong;
7. Increasing regional and international networking;
8. Networking crosses boundaries of traditional educational systems;
9. Use of associations for collection and dissemination of information, training and forging links with international bodies and industry;
10. Increasing use of new technologies for communications between associations;
11. Increased sharing of expertise among developing countries as well as from developed to developing countries;
12. More educational programmes that cross national boundaries;
13. Increasing sharing of technological facilities and resources;
14. Increasing emphasis on strengthening local skills;
15. Partnership with entrepreneurial bodies;

16. Decreasing cost of electronic technology for print and video production extends use to developing countries;

17. Increasing use of satellite for delivery of instruction in developing countries;

18. Large enrolments in developing country programmes encourages use of technologies that manage large amounts of information or enable wide distribution;

19. Increasing use of computer technology for management and internal operations;

20. Increasing interest in and support for a worldwide network of distance education information;

21. Growing tendency to establish regional clearinghouses for collection and dissemination of information; and

22. Increasing use of computer technology to manage databases and facilitate access.

Recent Recommendations for Action in Distance Education

The following recommendations have been summarized from several sources, mainly reports of distance education seminars and meetings which have taken place over the past two years, but also from papers prepared in the context of recent Commonwealth initiatives in distance education. There is no attempt here to 'second guess' the orginators of various recommendations, only to search for common needs that can form part of the basis of discussion at this Round Table. (I have paraphrased some of the material for presentation purposes.)

UNESCO/APEID

The participants of the Asia and Pacific Programme of Education Innovation for Development (APEID) held a Study Group Meeting (16-25 August, 1986, Nanjing, China) to evaluate distance education projects covered under APEID's third programming cycle. In their report (UNESCO, 1987a) they do not make recommendations *per se*, but address key areas for consideration. Among these are: distance education concepts and theory; information and communication technologies; broadcasting; non-formal education; student support services; evaluation of materials, processes, systems and structures including the identification of set criteria for evaluation; and research. Six objectives for the fourth cycle of APEID also emerged and these are to:

- Increase the efficiency of distance operations, especially in course design, materials production and delivery systems;

- Improve communication between distance learners and teachers, and devise learning support mechanisms that provide tutoring, guidance and shared learning;

- Ensure equal acceptability for distance education courses and qualifications as for conventional education;

- Support conventional schools which lack specialist teachers with learning resource materials and support mechanisms provided by distance education;

- Ensure that where distance education could provide prompt training of personnel for innovative educational development its scope and potential is considered; and

- Respond to the possibilities offered to distance education by new instructional and information technologies.

Also arising from the activities of distance educators working in conjunction with APEID and UNESCO's Regional Office for Education in Asia and the Pacific (ROEAP) are a directory of higher distance education institutions (UNESCO, 1982), a training manual on distance education systems and structure which describes many aspects of defined training needs (UNESCO, 1984), and an extremely thorough description of planning, operating and evaluating needs for distance education systems (UNESCO, 1985).

Asian Development Bank

The Asian Development Bank's Regional Seminar on Distance Education (26 November - 3 December, 1986, Bangkok, Thailand), held with the cooperation of

Sukhothai Thammathirat Open University and UNESCO/ROEAP, assembled eminent distance education specialists from the Asia-Pacific region and beyond, and resulted in the finest collection of regional papers yet produced (Asian Development Bank, 1987). The two volumes include papers on key topics in distance education and 17 country papers, many with specific recommendations for action. Recommendations of the seminar as a whole are summarized below and they are to:

- Improve the quality of distance education instruction through counselling facilities and expanded training facilities for top level administrators in distance education methodology and for instructional design personnel;

- Expand the emphasis on monitoring and evaluation to enhance distance education subsystems such as admission, curricular standards, production, delivery and assessment;

- Support feasibility studies to identify optimum methods for producing and managing computer-based learning;

- Undertake a series of feasibility studies in developing countries of the Asia-Pacific region to evaluate the extent to which geostationary satellite technology can contribute to the efficiency and effectiveness of distance education in various countries in the region;

- Examine the scope for upgrading technical capabilities of existing satellite systems to improve audio and video links and the expansion of satellite-based education systems, support efforts of developing countries to secure appropriate frequencies for satellites and safeguard future orbital positions;

- Adopt distance education credit systems that maximize student flexibility and free movement among institutions;

- Conduct a study to determine the feasibility of a joint venture regional training and information dissemination centre which provides technical assistance for distance education research and development including pre-project planning studies; and

- Optimize the use of existing national resources such as buildings, subject experts and the like.

The seminar also yielded recommendations for meeting distance education training needs of developing countries in the region. Areas identified where ADB, UNESCO and other international agencies could promote the initiation of action are:

- System planning/management: training of planning and management personnel as well as those dealing with regional outreach centers;

- Program planning: course design and curriculum development, etc.;

- Course production: production of radio/TV and non-broadcast materials, editing/layout and illustration/printing;

- Delivery system: face-to-face contact session, creation of study/resource centers, student guidance and counselling;

- Support system: library development and the like; and

- Research and evaluation: monitoring, feedback and statistical service.

The Commonwealth

Following a meeting of the Commonwealth Heads of Government in the Bahamas in 1985, the Commonwealth Secretary-General was requested "to explore the scope for new Commonwealth initiatives in the field of open learning." Accordingly, in a

study funded by the Overseas Development Administration of the United Kingdom, the Commonwealth Secretariat contracted with the International Extension College and Council for Educational Technology to provide some 16 background papers and a summary report (IEC/CET, 1987). These valuable works provided important background information for the Expert Group on Commonwealth Co-operation in Distance Education and Open Learning, whose proposal (Commonwealth Secretariat, 1987) was a springboard for a decision by the Commonwealth Heads of Government, meeting in late 1987 in Vancouver, to announce the establishment of the 'Commonwealth of Learning'. Although the 16 background papers and summary report are in only limited distribution now, it is intended that they be published at earliest convenience (H. Perraton, personal communication). Two of the background papers, Jenkins (1987) and Dodds and Inquai (1987), addressing Commonwealth cooperation in open learning in Asia and Africa, respectively, were consulted and their broad proposals for consideration are summarized here.

Janet Jenkins lists the following proposals for consideration in Asian distance education:

- Establish a distance education resource centre to collect and distribute information, hold resources, coordinate and provide training and promote research;
- Strengthen distance education in science and technology;
- Strengthen regional and student support services;
- Extend communications by satellite;
- Develop resources for television for distance education;
- Strengthen the private sector (referring to distance education providers);

- Strengthen research; and

- Provide training (by surveying existing world materials, developing a bank of such materials, developing training materials, providing local training for senior distance education professionals and supporting inter-institutional visits).

Tony Dodds and Solomon Inquai list the following proposals for new cooperative initiatives in distance teaching with specific reference to Commonwealth Africa:

- Joint and shared programme and course development (four programmes identified are: a) science, technology and vocational courses; b) post-secondary, middle and high level person power training programmes; c) middle-level adult education, extension and development officer training programmes; and d) sub-regional information campaigns); and

- Information exchange, cooperative training and professional development in distance education (three mechanisms identified are: a) programmes of distance education and staff training; b) sub-regional centres for research and evaluation in distance education; and c) regular information exchange and occasional continent-wide professional conferences and seminars).

Dodds and Inquai also caution that initiatives should mainly be built on existing institutions, see value in establishing modest sub-regional secretariats and extending Commonwealth activities to non-Commonwealth countries, and developing some core programmes which have large and dramatic objectives in order to lend international credibility.

The IEC/CET Summary Report synthesizes suggestions, recommendations and proposals from the Commonwealth as a whole. These are presented under the

general headings of project areas and subject areas. Collaborative projects, regional centres, information networks, animateurs, training staff and programme management are addressed as well. Project areas include:

- Information service on all aspects of distance education;
- Training for distance educators, both through international distance education training materials and regional and national training workshops;
- Regional centres to provide information networking hubs, training and advising services, and act as resource centres and coordinate research;
- Collaborative research and evaluation;
- Collaborative materials development (in medicine, agriculture, rural development, distance education management, English and various professions);
- Open polytechnic consortium;
- Open college projects;
- Materials exchange support service;
- New technology development projects; and
- Projects for minorities.

Asian Mass Communication Research and Information Centre

Twenty two participants from ten Asian countries, Canada, the U.K. and Australia met at the Seminar on Training Needs in the use of Media for Distance Education in

Asia (8-11 June, 1987, Singapore) to discuss how best to meet these training needs and to make recommendations for action. The seminar was organized by AMIC with financial support from the Canadian International Development Agency. In their Final Report (AMIC, 1987), participating experts recognized factors affecting the use of media for distance education and identified major training requirements for media practitioners and managers at five levels:

- Planning stage: a need for production management skills in multi-media distance education courseware development including planning and feasibility studies, and financial management such as costing, budget control and production scheduling;

- Course development/project implementation: major training requirements are: a) appropriate selection of media; b) instructional design; c) applied computing; d) graphic/visual design; e) writing skills for course writers; f) editing in print, audio and video; and g) script-writing and producing/directing in audio and video;

- Production/post-production: major training requirements are:
  a) management training; b) engineering (operations and maintenance);
  c) applied computing; and d) upgrading production skills;

- Delivery/support: recognizing the importance of systematic organization of delivery of multi-media distance education courseware (e.g. via newspapers, post office, broadcast and other systems), training programmes should be organized for these functions. Both tutors and study centre managers require information about and training in media utilization; and

- Research/evaluation: recognizing the need to organize a system of feasibility studies, market analysis/student needs, public relations, research and development, and formal evaluation pertaining to multi-media distance education courseware, appropriate training should be arranged for these functions.

The seminar participants noted that all training needs could not, indeed should not, occur at the institutional and country level and went on to make the following seminar recommendations:

- Given the stated needs at the policy establishment, systems planning/implementation level, whether nationally, regionally, or institutionally, there is a need for a centralized clearinghouse for management and dissemination of information on distance education training resources with particular reference to applied media and training materials for media practitioners;

- To meet urgent and pressing training needs in the use of media for distance education, it is recommended that a network of training exchanges should be established to facilitate training of personnel in established distance education centres in the region. A regional centre to coordinate the exchange should be established; and

- AMIC should collect data on regional training needs in an effort to quantify and prioritize the needs for the region to facilitate decision-making on future regional training plans.

UNESCO

A number of eminent international distance educators met for a UNESCO-sponsored International Consultation on Higher Level Distance Education (6-11 September, 1987, Deakin University, Victoria, Australia). They focussed on technological advances in higher level distance education, the implications of these for higher education as a whole, and the targets and mechanisms of cooperative initiatives in the field. While not making recommendations *per se*, the Consultation set immediate and longer term objectives, with respect to higher level distance education, in the form of a UNESCO action plan (UNESCO, 1987b). Immediate objectives are to:

- Develop bibliographic and information databases and make them available to worldwide users (ICDL and ICDE are suggested as partners in this initiative);

- Survey existing resources at the national, regional and international levels;

- Analyze the uses of technology and their financial implications, especially in developing countries;

- Develop and promote regional networks using appropriate regional bodies as focal points; and

- Collaborate more closely with the ICDE.

Longer term objectives are to:

- Establish a coordinated global research programme to identify, analyze and evaluate key distance education issues;

- Collect by appropriate surveys and disseminate distance education statistical data;

- Increase funding in the area of higher level distance education;

- Improve facilities for the production and exchange of distance education materials (copyright and language barriers are mentioned); and

- Establish national centres of excellence on a worldwide basis and in collaboration with appropriate national authorities.

Summary of Recent Recommendations

The concerns, proposals for action and recommendations arising from the seven sources above are generally indicative of current thinking in distance education. It is worth noting, however, that they arose in the varied contexts of thematic, regional and international forums, cover only the preceeding two years and are not exhaustive. I subjected the items to a content analysis by way of a frequency count of common concerns in the categories of: a) institutional development; b) association development; c) collaboration; d) technology application; e) information mechanisms; f) training; and g) specific distance teaching programmes. Each category had about six sub-categories. The content analysis suggests the following recommendations:

1. Create mechanisms, systems and materials for training in a range of distance education operations (planning, management, design, development, production, delivery, support, research and evaluation);

2. Establish a global network to collect and disseminate information on all aspects of distance education;

3. Systematize information about applied technologies in distance education and develop protocols for assessing their feasibility in different contexts;

4. Develop systems for sharing distance learning materials in areas of common need and foster collaborative development projects;

5. Establish new or strengthen existing regional resource centres for materials, training and information networking; and

6. Strengthen student support and flexibility through counselling, library services, learning centres, tutoring, supplementary support and cross-crediting.

Conclusion

This briefing paper is intended to provide you with a general sense of how distance education is evolving and how we practitioners are defining the most pressing needs in the field. It is the prerogative of the Round Table participants to draw information from any part of the paper, or indeed not at all, then fall back on their considerable collective experience in making recommendations to both UNESCO and the ICDE on how these two important bodies should best proceed in meeting the priority needs in higher level distance education, with particular attention to the needs of developing countries. Evolution in distance education has been addressed in five general categories - institutions, associations, collaboration, technological application and information. The categories are artificial as the boundaries of each lie clearly in every other domain. As well, the diversity of approaches to distance education, the applicability of many techniques to all levels of education and the tempo of change, exacerbated as it is by technological innovation and new devices for communication, all conspire to confound us. Even so, there is a common understanding of what we need to do, and a sure sense that our undertaking must reflect the widest possible range of contexts where distance education is at work.

The content analysis of recent proposals and recommendations for action in distance education illustrates the predominant concerns of distance educators and those bodies with an interest in it. The most commonly addressed issues, and to the same degree, are training, information and collaboration. Training is seen as an essential and very important element of institutional development and is needed at virtually all levels. In the training category, all the forums addressed the need for better prepared research and evaluation staff. Training needs for those who work in the areas of

student support, and course development and production, also are frequently identified. Information needs are stressed. Of the six forums that dealt with information issues, all identified the importance of having repositories or clearinghouses for distance education information, and all advised that regional centres or 'centres of excellence' be established to facilitate information movement. Two-thirds of the forums indicated the importance of networking to meet information needs. It seems clear that distance educators realize the importance of information in promoting innovation and allowing innovators to work to common standards or on a comparable basis. As a category, collaboration appears to be highly valued for meeting training needs and to facilitate the exchange of information. Cross-crediting of courses is also mentioned twice in this category, both times in an Asian regional context. Finally, technology receives attention in the areas of satellite and broadcast, as well as in the use of print, audio and video media. Some forums addressed the use of technology both to support information networking and to meet training needs of technicians.

Training, information and collaboration. These are the common threads of concern running through higher level distance education today. How do we best meet stated needs in each of these areas? What role can UNESCO and the ICDE play? Some regions of the world have infrastructures that provide a base for communication, information flow and collaboration. These in turn promote and facilitate training activities, joint development and course sharing ventures, and technology transfer and innovation. It must certainly be a high priority to assist in strengthening higher level distance education in developing regions, perhaps through the development of associations and regional resource centres. This presumes that regional institutions and associations have financial resources available to mount planning meetings and conferences, as well as to install requisite tools for managing information flow. Regional initiatives should be coordinated to achieve best effect.

It is evident that the communication of information underlies innovation and collaboration in distance education. Therefore, we must address the need to ensure that existing databases and information are widely available and that new information flows through effective networks. The technology is now available to achieve this and a demonstration project could be launched in short order. Even a cursory inspection of the literature confirms that distance education has become too complex to be treated generically. Thematic approaches are valuable and there have been notable successes. Where financial resources are available, it would be useful to address such topics as research, evaluation, student support, course development, applied technology or information management at forums which assemble distance education practitioners from all regions. Finally, it is imperative that the ICDE, working with governments and international and donor bodies, continues to animate and coordinate distance education at the international level. To accomplish this, we require a strong and professionally managed Permanent Secretariat, an active and dedicated Executive, and a growing and well-informed individual and institutional Membership. The development of financial resources will facilitate communication and liaison, underwrite involvement by developing country members, and permit the Council to increase the frequency and intensity of its activities in developing regions.

Distance education has for two decades experienced very rapid growth. It is marked by a proliferation of context-specific forms and numerous experiments to test methods and tools. None of this is unexpected in an era when a global society is finding its legs and learning to speak with a new voice. Distance learning, 'the post-industrialized form of education,' will continue to grow. We should not, indeed can not afford to, take less than a disciplined, professional and yet creative and caring approach in ensuring that informational, human and financial resources are applied where need is greatest.

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